

AMENDMENTS TO THE CLAIMS

1. (currently amended): ~~An article of manufacture comprising a computer readable medium having embodied thereon a set of program instructions configured to enable a computing device to perform a~~ A computer-implemented method for reconstructing metabolism of a mammalian organism in a non-disease state and a disease state, said method comprising:

- (a) collecting data regarding the mammalian organism's metabolism for said non-disease and disease states;
- (b) linking the data into metabolic pathways using a relational database;
- (c) ranking the metabolic pathways based on their relevance to human metabolism;
- (d) linking said ranked metabolic pathways to functional information, disease manifestations and/or high-throughput screening information;
- (e) identifying interconnections between the ranked metabolic pathways; and
- (f) creating and displaying interactive maps of the mammalian organism's metabolism in said non-disease and disease states ~~exclusively~~ on the basis of information obtained in steps (a) through (e).

2. (canceled)

3. (currently amended): ~~An article of manufacture comprising a computer readable medium having embodied thereon a set of program instructions configured to enable a computing device to perform a~~ A computer-implemented method for identifying a mammalian drug target, said method comprising:

- (a) collecting data regarding a mammalian organism's metabolism for a non-disease state and a disease state;
- (b) linking the data into metabolic pathways using a relational database;
- (c) ranking the metabolic pathways based on their relevance to human metabolism;
- (d) linking said ranked metabolic pathways to functional information, disease manifestations and/or high-throughput screening information;
- (e) identifying interconnections between the ranked metabolic pathways;

~~(e)(f)~~ creating and displaying interactive maps of the mammalian organism's metabolism in said non-disease and disease states ~~exclusively~~ on the basis of information obtained in steps (a) through ~~(d)(e)~~; and

~~(f)(g)~~ identifying a mammalian drug target by comparing differences between said non-disease and disease states using the metabolic maps.

4. (canceled)

5. (currently amended): The ~~article~~ method of claim 1, wherein said mammalian organism is a human.

6. (currently amended): The ~~article~~ method of claim 1, wherein said data regarding the mammalian organism's metabolism comprises expressed sequence tag data.

7. (currently amended): The ~~article~~ method of claim 1, wherein said data regarding the mammalian organism's metabolism comprises biochemical units comprising metabolic steps, chemical compounds, reactions and/or enzymatic functions.

8. (currently amended): The ~~article~~ method of claim 7, wherein said enzymatic functions comprise genes and proteins.

9. (currently amended): The ~~article~~ method of claim 7, wherein each of said biochemical units is linked to an annotation table, said annotation table comprising at least one field.

10 (currently amended): The ~~article~~ method of claim 9, wherein said at least one field is selected from the group consisting of organ localization, tissue localization, intracellular localization, intracellular compartmentalization, subcellular localization in another organism, a relationship to a disease, and a reference to an information source.

11-12. (canceled)

13. (currently amended): The article method of claim 3, wherein said mammalian organism is a human.

14. (currently amended): The article method of claim 3, wherein said data regarding the mammalian organism's metabolism comprises expressed sequence tag data.

15. (currently amended): The article method of claim 3, wherein said data regarding the mammalian organism's metabolism comprises biochemical units comprising metabolic steps, chemical compounds, reactions and/or enzymatic functions.

16. (currently amended): The article method of claim 15, wherein said enzymatic functions comprise genes and proteins.

17. (currently amended): The article method of claim 15, wherein each of said biochemical units is linked to an annotation table, said annotation table comprising at least one field.

18. (currently amended): The article method of claim 17, wherein said at least one field is selected from the group consisting of organ localization, tissue localization, intracellular localization, intracellular compartmentalization, subcellular localization in another organism, a relationship to a disease, and a reference to an information source.

19. (currently amended): ~~An article of manufacture comprising a computer readable medium having embodied thereon a set of program instructions configured to enable a computing device to perform a~~ A computer-implemented method for predicting the existence of a novel enzyme in a mammalian organism, said method comprising:

- (a) collecting data regarding the mammalian organism's metabolism in non-disease and disease states;
- (b) linking the data into metabolic pathways using a relational database;
- (c) ranking the metabolic pathways based on their relevance to human metabolism;
- (d) linking said ranked metabolic pathways to functional information, disease manifestations and/or high-throughput screening information;

(d)(e) identifying interconnections between the ranked metabolic pathways;

(e)(f) creating and displaying interactive maps of the mammalian organism's metabolism in said non-disease and disease states exclusively on the basis of information obtained in steps (a) through (d)(e); and

(f)(g) predicting the existence of a novel enzyme by detecting a gap between two non-essential metabolites that cannot be filled by any known enzyme in said mammalian organism.

20. (currently amended): The article method of claim 19, wherein said mammalian organism is a human.

21. (currently amended): The article method of claim 19, wherein said data regarding the mammalian organism's metabolism comprises expressed sequence tag data.

22. (currently amended): The article method of claim 19, wherein said data regarding the mammalian organism's metabolism comprises biochemical units comprising metabolic steps, chemical compounds, reactions and/or enzymatic functions.

23. (currently amended): The article method of claim 22, wherein said enzymatic functions comprise genes and proteins.

24. (currently amended): The article method of claim 22, wherein each of said biochemical units is linked to an annotation table, said annotation table comprising at least one field.

25. (currently amended): The article method of claim 24, wherein said at least one field is selected from the group consisting of organ localization, tissue localization, intracellular localization, intracellular compartmentalization, subcellular localization in another organism, a relationship to a disease, and a reference to an information source.

26. (new): The method of claim 1, wherein the ranking of the metabolic pathways comprises assigning each pathway to one of the following categories:

- (a) a multi-step mammalian pathway wherein all reactions are catalyzed by known human enzymes and/or enzymes that have open reading frame (ORF) candidates in the human genome;
- (b) a multi-step pathway wherein at least one reaction is not catalyzed by an identified human enzyme or an enzyme that has an ORF candidate in the human genome; and
- (c) a single step pathway.

27. (new): The method of claim 3, wherein the ranking of the metabolic pathways comprises assigning each pathway to one of the following categories:

- (a) a multi-step mammalian pathway wherein all reactions are catalyzed by known human enzymes and/or enzymes that have open reading frame (ORF) candidates in the human genome;
- (b) a multi-step pathway wherein at least one reaction is not catalyzed by an identified human enzyme or an enzyme that has an ORF candidate in the human genome; and
- (c) a single step pathway.

28. (new): The method of claim 19, wherein the ranking of the metabolic pathways comprises assigning each pathway to one of the following categories:

- (a) a multi-step mammalian pathway wherein all reactions are catalyzed by known human enzymes and/or enzymes that have open reading frame (ORF) candidates in the human genome;
- (b) a multi-step pathway wherein at least one reaction is not catalyzed by an identified human enzyme or an enzyme that has an ORF candidate in the human genome; and
- (c) a single step pathway.